

# Harmonized system of quality assessment for electronic components: Sectional specification: Quartz crystal units (capability approval)

# Committees responsible for this British Standard

The preparation of this British Standard was entrusted by the Electronic Components Standards Policy Committee (ECL/-) to Technical Committee ECL/11, upon which the following bodies were represented:

- British Telecommunications plc
- EEA (the Electronics and Business Equipment Association)
- Electronic Components Industry Federation
- Institution of Electrical Engineers
- Ministry of Defence
- National Supervising Inspectorate
- Society of British Aerospace Companies Limited
- Telecommunication Engineering and Manufacturing Association

This British Standard, having been prepared under the direction of the Non-ferrous Metals Standards Policy Committee, was published under the authority of the Board of BSI and comes into effect on 31 January 1991

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The following BSI references relate to the work on this standard:  
Committee reference ECL/11  
Draft for comment 89/28710 DC

ISBN 0 580 19164 8

## Amendments issued since publication

| Amd. No. | Date of issue | Comments |
|----------|---------------|----------|
|          |               |          |
|          |               |          |
|          |               |          |
|          |               |          |

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# National foreword

This British Standard has been prepared under the direction of the Electronic Components Standards Policy Committee. It is identical with CENELEC Electronic Components Committee (CECC) 68100:1989 “*Harmonized system of quality assessment for electronic components. Sectional specification: Quartz crystal units (Capability approval)*” including Amendment 1 (1990).

This standard is a harmonized specification within the CECC System.

**Cross-references.** The British Standard which implements CECC 00100 is BS 9000 “*General requirements for a system for electronic components of assessed quality*”, Part 2:1990 “*Specification for the national implementation of the CECC system*”.

| International Standard | Corresponding British Standard                                                                                                               |
|------------------------|----------------------------------------------------------------------------------------------------------------------------------------------|
| IEC 68                 | BS 2011 <i>Environmental testing</i><br>(Identical)                                                                                          |
| IEC 122-1              | BS 9610:1982 <i>Specification for quartz crystal units of assessed quality: generic data and methods of test</i><br>(Technically equivalent) |
| CECC 68000             | BS CECC 68000: <i>Generic specification: Quartz crystal units</i> <sup>a</sup><br>(Identical)                                                |

<sup>a</sup> In preparation.

A British Standard does not purport to include all the necessary provisions of a contract. Users of British Standards are responsible for their correct application.

**Compliance with a British Standard does not of itself confer immunity from legal obligations.**

## Summary of pages

This document comprises a front cover, an inside front cover, pages i and ii, the CECC title page, pages ii to iv, pages 1 to 22, an inside back cover and a back cover.

This standard has been updated (see copyright date) and may have had amendments incorporated. This will be indicated in the amendment table on the inside front cover.

Förderverein für Elektrotechnische Normung (FEN) e. V.  
Cenelec Electronic Components Committee

# CECC

Système Harmonisé d'Assurance de la Qualité  
des Composants Electroniques

## SPECIFICATION INTERMEDIAIRE: RESONATEURS A QUARTZ

Harmonized System of Quality Assessment for  
Electronic Components

## SECTIONAL SPECIFICATION: QUARTZ CRYSTAL UNITS

Harmonisiertes Gütebestätigungssystem für  
Bauelemente der Elektronik

## RAHMENSPEZIFIKATION: SCHWINGQUARZE



# 1

Edition  
Issue  
Ausgabe

## CECC 68 100

1989

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## Foreword

The CENELEC Electronic Components Committee (CECC) is composed of those member countries of the European Committee for Electrotechnical Standardization (CENELEC) who wish to take part in a harmonized System for electronic components of assessed quality.

The object of the System is to facilitate international trade by the harmonization of the specifications and quality assessment procedures for electronic components, and by the grant of an internationally recognized Mark, or Certificate, of Conformity. The components produced under the System are thereby acceptable in all member countries without further testing.

This specification has been formally approved by the CECC, and has been prepared for those countries taking part in the System who wish to issue national harmonized specifications for QUARTZ CRYSTAL UNITS. It should be read in conjunction with the current regulations for the CECC System.

At the date of printing of this document the member countries of the CECC are, Austria, Belgium, Denmark, Finland, France, Germany, Ireland, Italy, the Netherlands, Norway, Portugal, Spain, Sweden, Switzerland and the United Kingdom.

## Preface

This sectional specification was prepared by CECC Working Group 17: Piezoelectric devices for frequency control and selection.

It is based, wherever possible, on the Publications of the International Electrotechnical Commission and in particular on IEC Publication 122-1: Quartz crystal units for frequency control and selection: Part 1: Standard values and test conditions.

The text of this sectional specification was circulated to the CECC for voting in the documents listed below and was ratified by the President of the CECC for publication as a CECC Specification.

| Document              | Voting   | Report on the Voting  |
|-----------------------|----------|-----------------------|
| CECC(Secretariat)2188 | May 1988 | CECC(Secretariat)2312 |

NOTE This specification is published initially in French and English. The German text will follow as soon as it has been prepared.



## Section 1. Scope

This sectional specification applies to quartz crystal units manufactured as custom built products or as standard catalogue items and whose quality is assessed on the basis of capability approval.

It prescribes the preferred ratings and characteristics, with the appropriate tests and measuring methods contained in the generic specification CECC 68000, and gives the general performance requirements to be used in detail specifications for quartz crystal units.

The concept of preferred values is directly applicable to standard catalogue items but does not necessarily apply to custom built products.

## Section 2. General, preferred ratings and guidance on detail specifications

### 2.1 Related documents

IEC 68 : Basic environmental testing procedures.

CECC 68000 : Generic specification: Quartz crystal units.

NOTE The above references apply to the current editions except for IEC 68 for which the referred edition and the applicable test clauses of CECC 68000 shall be used.

### 2.2 Preferred ratings and characteristics

The values given in detail specifications shall preferably be selected from those stated in 2.4 of the generic specification CECC 68000.

### 2.3 Information to be prescribed in detail specifications (for both custom built and standard catalogue items)

Guidance on the preparation of detail specifications is given in the blank detail specification CECC 68101. For standard catalogue items each detail specification shall state all the tests and measurements required for inspection. This shall, as a minimum, include the relevant tests given in the blank detail specification, with methods and severities.

The following information shall be given in each detail specification.

#### 2.3.1 Outline drawing and dimensions

The detail specification shall include a dimensional drawing of the crystal unit, and/or reference to an appropriate International Standard, to permit easy recognition and to provide information for dimensioning and gauging procedures.

The dimensions shall include the overall dimensions of the body of the component and the size and spacing of the terminations. All dimensions shall be stated in mm.

Terminal connections shall be identified for enclosures with more than two terminations.

When a detail specification covers more than one enclosure the dimensions and their associated tolerances shall be placed in a table below the drawing.

When the configuration is other than described above, the detail specification shall state such dimensional information as will adequately describe the crystal unit.

#### 2.3.2 Marking

The detail specification shall prescribe the content of the marking on the crystal unit and on the primary package in accordance with 2.5 of CECC 68000.

#### 2.3.3 Ordering information

The detail specification shall prescribe that the following information is required when ordering a crystal unit:

- 1) Quantity
- 2) Detail specification number, issue number and date  
and where applicable
- 3) Nominal frequency in kHz or MHz and overtone order

- 4) enclosure type
- 5) frequency tolerance(s) and operating temperature range
- 6) circuit condition
- 7) full description of any additional requirements.

#### **2.3.4 Additional information (not for inspection purposes)**

The detail specification may include information which is not normally required to be verified by the inspection procedure, such as circuit diagrams, curves, drawings and notes needed for clarification.

### **Section 3. Capability approval**

#### **3.1 Eligibility for capability approval**

Prior to making an application for capability approval a manufacturer shall first obtain manufacturer's inspection approval in accordance with § 1 of CECC 00107-1.

The primary stage of manufacture shall be as defined in 3.1 of the generic specification CECC 68000.

#### **3.2 Structural similarity**

A Structural similarity exists where a range of crystal units incorporates one or more of the following features in common:

- materials, methods of sealing and agreed dimensional range for the enclosure
- crystal design and crystal processing.

#### **3.3 Procedures for capability approval**

##### **3.3.1 General**

Capability approval in quartz crystal technology covers:

- the complete design, material preparation and manufacturing techniques, including control procedures and tests
- the performance limits claimed for the processes and products, that is, those specified for the CQCs
- the range of mechanical structures for which approval is granted.

##### **3.3.2 Application for capability approval**

In order to obtain capability approval the manufacturer shall apply the rules of procedure given in CECC 00107-III.

In an application for capability approval the manufacturer shall define the boundaries of the capability for which approval is sought in accordance with 3.5 of this specification.

##### **3.3.3 Granting of capability approval**

Capability approval shall be granted when the manufacturer has:

- prepared a capability manual describing the capability for which he wishes to be approved, to the satisfaction of the ONS
- agreed with the ONS the range of CQCs, as defined in § 1.2 of CECC 00107-III, to be used for the assessment of capability.
- successfully demonstrated that he can design and manufacture components which satisfy the requirements of this sectional specification, within the limits of his capability
- prepared a capability approval test report to the satisfaction of the ONS.

#### **3.4 Capability manual**

The manufacturer shall prepare a manual describing his capability (see § 2.2 of CECC 00107-III), in relation to the technologies involved.

The manual shall be approved by the ONS who shall ensure that it is a true and complete record of procedures carried out by the manufacturer during the design, production, testing, inspection and release of his products. This manual is a document that shall be treated as “commercial in confidence”.